Patent
Attorney's Docket No. 000600-016

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Amended) A process for cleaning metals comprising the steps of

(a) contacting a metal with an aqueous solution comprising hydrogen peroxide, at least one mineral acid, and at least one compound selected from the group consisting of complexing agents based on phosphonic acids, salts and degradation products thereof in an amount from about 10 to about 60 wt% based on the amount of hydrogen peroxide, said solution having a pH of below 7; and

(b) cleaning said metal via said contacting step.

2. (Original) A process as claimed in claim 1, wherein the aqueous solution comprises at least one compound selected from the group consisting of complexing agents based on phosphonic acids, salts and degradation products thereof in an amount from about 20 to about 50 wt% based on the amount of hydrogen peroxide.

3. (Original) A process as claimed in claim 2, wherein the aqueous solution comprises at least one compound selected from the group consisting of complexing agents based on phosphonic acids, salts and degradation products thereof in an amount from about 35 to about 45 wt% based on the amount of hydrogen peroxide.

4. (Original) A process as claimed in claim 1, wherein the complexing agent is based on at least one compound selected from the group consisting of 1-hydroxyethylidene-1, 1-diphosphonic acid, 1-aminoethane-1, 1-diphosphonic acid, aminotri (methylenephosphonic acid), ethylene diamine tetra (methylenephosphonic acid), hexamethylene diamine tetra (methylenephosphonic acid), diethylenetriamine penta (methylenephosphonic acid), diethylenetriamine hexa (methylenephosphonic acid), salts and degradation products thereof.

5. (Previously amended) A process as claimed in claim 4, wherein the complexing agent is based on at least one compound selected from the group consisting of 1-hydroxyethylidene-1, 1-diphosphonic acid, salt and degradation products thereof.

6. (Original) A process as claimed in claim 1, wherein the solution comprises hydrogen peroxide in an amount from about 0.5 to about 20 wt%.

7. (Cancelled)

8. (Previously Amended) A process as claimed in claim 1,wherein the mineral acid comprises sulfuric acid.

9. (Previously Amended) A process as claimed in claim 8, wherein the sulfuric acid is present in an amount from about 0.5 to about 20 wt%.

10. (Original) A process as claimed in claim 1, wherein the solution comprises at least one surfactant.

11. (Original) A process as claimed in claim 10, wherein the solution comprises at least one non-ionic surfactant.

12. (Original) A process as claimed in claim 1, wherein the metal is selected from the group consisting of aluminium, copper and steel.

13. (Previously Amended) A process for cleaning metals comprising the steps of

(a) contacting a metal with an aqueous solution comprising sulfuric acid in an amount from about 0.5 to about 20 wt%, hydrogen peroxide and at least one compound selected from the group consisting of complexing agents based on phosphonic acids, salts and degradation products thereof in an amount from about 35 to about 50 wt% based on the amount of hydrogen peroxide, said solution having a pH of below 7; and

(b) cleaning said metal via said contacting step.

14. (Previously Amended) A process as claimed in claim 13, wherein the complexing agent is based on at least one compound selected from the group consisting of 1-hydroxyethylidene-1, 1-diphosphonic acid, salts and degradation products thereof.

15. (Previously Amended) A process for cleaning metals comprising the steps of

(a) contacting a metal with an aqueous solution comprising at least one mineral acid, at least one non-ionic surfactant, hydrogen peroxide and at least one compound selected from the group consisting of complexing agents based on phosphonic acids, salts and degradation products thereof in an amount from about 10 to about 60 wt% based on the amount of hydrogen peroxide, said solution having a pH of below 7; and

(b) cleaning said metal via said contacting step.

16. (Previously Amended) A process as claimed in claim 15, wherein the complexing agent is based on at least one compound selected from the group consisting of 1-hydroxyethylidene-1, 1-diphosphonic acid, salts and degradation products thereof.

17. (Previously Presented) A process as claimed in claim 1, wherein said aqueous solution has a pH of from about 0 to about 6.

18. (Previously Presented) A process as claimed in claim 1, wherein said aqueous solution has a pH of from about 0.5 to about 5.

19. (Previously Presented) A process as claimed in claim 13, wherein said aqueous solution has a pH of from about 0 to about 6.

20. (Previously Presented) A process as claimed in claim 13, wherein said aqueous solution has a pH of from about 0.5 to about 5.

21. (Previously Presented) A process as claimed in claim 15, wherein said aqueous solution has a pH of from about 0 to about 6.

22. (Previously Presented) A process as claimed in claim 15, wherein said aqueous solution has a pH of from about 0.5 to about 5.

23. (Previously presented) A process for cleaning and passivating metals, comprising the steps of:

(a) providing an aqueous solution comprising:

hydrogen peroxide in an amount of from about 0.5 to about 20 wt%, at least one mineral acid, and at least one compound selected from the group consisting of complexing agents based on phosphonic acids, salts and degradation products thereof in an amount from about 10 to about 60 wt% based on the amount of hydrogen peroxide, the remainder being water; and

(b) contacting said metal with said solution for a time sufficient to effect cleaning and less than an amount of time to effect etching; and

(c) passivating said metal via said contacting step.

24. (New) A process as claimed in claim 23, wherein said aqueous solution has a pH of from about 0 to about 6, and wherein the complexing agent is based on at least one compound selected from the group consisting of 1-hydroxyethylidene-1, 1-diphosphonic acid, salts and degradation products thereof.